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Do infants use a generalised motion processing system for discriminating facial motion?

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Abstract

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2001 *Psychology, Public Policy, and Law* **7** 3 – 35). Many studies have shown that faces with positive expressions (happy) are also better remembered than those with negative expressions (sad, angry, fearful—Kottoor, 1989 *Psychological Studies* **34** 102 – 105; D'Argembeau et al, 2003 *Cognition and Emotion* **17** 609 – 622; Putman et al, 2004 *Psychoneuroendocrinology* **29** 953 – 960). However, the interaction between facial expressions and the other-race effect still remains to be clarified. Here, we investigated whether different facial expressions modulate the other-race bias. The experiment comprised three parts: learning, retention, and test. In the learning phase, Asian and Caucasian participants rated 64 faces (Asian-happy, Asian-sad, Caucasian-happy, Caucasian-sad) on distinctiveness without knowledge of a subsequent memory test. During the 10 min retention, participants were asked to rate the distinctiveness of English names. For the facial memory test, the task was to categorise 128 faces, 64 previously seen faces and 64 unseen faces, as 'seen' or 'not seen' during the indirect learning phase. Performance on the facial memory task showed significant interactions between the race and the expression of the faces, on both false-alarm rate and criterion. These results suggest that the other-race effect might be modulated by facial expressions.
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◆ **The effects of distinctiveness on perceptual change detection for faces**
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The enhanced memorability of distinctive faces when compared to typical ones has been attributed to a greater familiarity increment for distinctive faces during learning (Vokey and Read, 1992 *Memory & Cognition* **20** 291 – 302). Since typical faces are associated with higher general, pre-experimental familiarity, the greater increment in familiarity of distinctive faces leads to more accurate memory representations, producing higher 'hit' as well as lower 'false-alarm' recognition rates. Results from studies on perceptual and attentional processing suggest that familiarity enables more efficient processing of face stimuli (Tong and Nakayama 1999 *Journal of Experimental Psychology: Human Perception and Performance* **25** 1016 – 1035). These previous findings lead to the hypothesis that, if typical faces are associated with higher general familiarity, then perceptual processing of these faces would be more efficient than that of distinctive faces. We examined the relationship between perceptual processing involving attention and distinctiveness. A modified change-blindness paradigm, similar to the one reported by Buttle and Raymond (2003 *Perception & Psychophysics* **65** 1296 – 1306) was used. A pair of faces composed of distinctive and non-distinctive faces were briefly presented, followed by a second pair in which one of the faces from the first pair was changed. The presentations of both pairs were masked and participants were required to identify the location of change. Contrary to previous findings, changes involving distinctive faces were more easily detected than those involving non-distinctive faces, suggesting that greater attentional efficiency is involved in the processing of these faces. The results not only point to a nonlinear relationship between facial familiarity and distinctiveness but also suggest that distinctiveness may represent another dimension mediating processing efficiency.
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◆ **Do infants use a generalised motion processing system for discriminating facial motion?**
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Previous research has shown that infants aged 4 to 8 months can perceive and discriminate facial motion (Spencer et al, 2004 *Perception* **33** Supplement, 56). Here we report a study in which we used an animated average face to test infants' ability to discriminate viewpoint invariance of biological facial motion. We familiarised infants with the animated face using one motion sequence of an actor telling a joke. The stimulus was either a full-face view (0°) or a face rotated 60° about a vertical axis (between full-face and profile). Once familiarised, infants were presented with two stimuli. One was the same as the habituation stimulus, shown at a different angle. The other was a novel motion sequence drawn from a different actor telling a different joke. Infants demonstrated a significant preference for the novel motion sequence, suggesting that they were able to encode the face-based motion in a viewpoint-invariant manner. However, in a parallel study of identical design but using inverted stimuli, infants did not demonstrate a face-inversion effect. This indicates that infants were using a general motion-processing system to discriminate between the sequences rather than a face-specific process.